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EXAMINER
GUILL, RUSSELL L

ART UNIT	PAPER NUMBER
2123	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/825,218	NASR ET AL.	
	Examiner	Art Unit	
	Russ Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/4/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-97 and 107-121* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-97,107-109 and 116-121* is/are rejected.

7)☒ Claim(s) *110-115* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to an Amendment filed June 4, 2007.

2. Claims 98 – 106 were canceled. Claims 116 – 121 were added. Claims 1 – 97 and 107 - 121 are pending. Claims 1 – 97 and 107 - 121 have been examined. Claims 1 – 97, 107 - 109 and 116 - 121 have been rejected. Claims 110 – 115 have been objected to.

3. **As recited previously, the Examiner would like to thank the Applicant for the very well presented response, which was useful in the examination process. The Examiner appreciates the effort to perform a thorough analysis of the Office Action, and make appropriate arguments and amendments.**

Response to Remarks

4. Regarding claim 23 objected to for minor informalities:

   4.1. Applicant's amendment to claim 23 overcomes the objection.

5. Regarding claim 101 – 103 rejected under 35 USC § 112:

   5.1. Applicant has canceled the claims, and so the rejection is moot.

6. Regarding claim 110 – 115 rejected under 35 USC § 112, second paragraph:

   6.1. Applicant's amendments to the claims overcome the rejections.

7. Regarding claim 39 - 58 rejected under 35 USC § 101:

   7.1. Applicant's amendments to the claims overcome the rejections.

8. Regarding claim 72 - 84 rejected under 35 USC § 101:

   8.1. Applicant's amendments to the claims overcome the rejections.

9. Regarding independent claims 1, 39, 21, 59, 72 and 85 rejected under 35 USC § 103:

9.1. Applicant's arguments have been fully considered, and are persuasive, as follows. Please note that only a part of the Applicant's arguments is persuasive. However, after further search and consideration, a new rejection is made.

9.2. The Applicant argues:

9.3. Applicants respectfully traverse the Office's rejection of claims 1-97 and 107109. Contrary to the Office's assertions, Watson, Onodera, Moore, MilStd1629A, Busch, Lobley, and Partridge, alone or in combination, do not disclose or suggest, "assessing a plurality of remanufacturing options for each of the items based on the determined overall condition of the items regardless of a condition of each of the items" as recited in claims 1 and 39, "a remanufacturing assessment processing system in the at least one computing device that assesses a plurality of remanufacturing options for each of the items based on the determined overall condition of the items regardless of a condition of each of the items" as recited in claim 21, "assessing a plurality of remanufacturing options for each of the items regardless of the condition of each of the items" as recited in claims 59 and 85 and "a remanufacturing assessment system that assesses a plurality of remanufacturing options for each of the items regardless of the condition of each of the items" as recited in claim 72.

9.4. First, the Office asserts it would have been obvious that one type of problem category determined is "no problem", and one type of severity level determined is a level "zero severity". In support of this position the Office cites to FIG. 15 in Watson which the Office asserts graphically illustrates a functional relationship of a deduct value, severity level and problem density for a given problem type. The Office asserts these curves in FIG. 15 appear to contain zero as an allowed value, thus the Office assumes areas in the roof without defects are rated and included in the assessment process.

9.5. Applicants respectfully disagree. The fact that a graph has a starting point or baseline does not teach or suggest that an overall condition of areas of a roof without defects are determined and that those determinations for non defective areas are used in an assessment of a plurality of remanufacturing options. Instead, Watson only discloses identifying and evaluating areas with defects. For example, see: col. 7, lines 16-19 in Watson which states, "As the operator 104 surveys the roof

102 and evaluates potential structural problems or defects, information regarding such problems or defects is entered by the operator 104 into an instrument 106" (Emphasis added); col. 8, lines 32-34 in Watson which states, "As further shown symbolically in FIG. 1, the data from the defects file 122 is applied as input data to a "deduct" processor 130" (Emphasis added); col. 18, lines 18-30 in Watson which states, "With respect to each of the areas of the roof 102, and with reference to FIG. 8, the operator 104 can inspect the roof 102 for problems such as the problem defects previously described herein. With respect to each of the particular problems, the operator 104 can manually input data into the hand held instrument or central processing unit (CPU) 106 representative of the particular type of problem encountered with the roof 102. That is, when a particular set of potential problems have been defined for the roof 102, each problem defect can be identified by separate number. For example, a problem type "10" can be characterized as the problem associated with membrane alligatoring. Data entry can be made through entry keyboard 103, with data and ineractive *(sic)* commands displayed on display screen 105" (Emphasis added); and col. 20, lines 45-50 in Watson which states, "When all problem defects and associated data relating to the severity level and problem density have been entered into the central processing unit 106, the operator 104 can enter an appropriate command through the entry device 103 so as to indicate to the central processing unit 106 that the input of data has been completed" (Emphasis added). Accordingly, Watson only discloses determining the overall condition of areas of the roof with defects. No condition of areas of a roof without defects is ever determined or used for assessment of remanufacturing options.

9.5.1. The Examiner respectfully replies:

9.5.2. The Applicant's conclusion of the argument as recited above is, "Accordingly, Watson only discloses determining the overall condition of areas of the roof with defects. No condition of areas of a roof without defects is ever determined or used for assessment of remanufacturing options." The Examiner respectfully disagrees. As recited by the Applicant above, "For example, see: col. 7, lines 16-19 in Watson which states, "As the operator 104 surveys the roof 102 and evaluates potential structural problems or defects, information regarding such problems or defects is entered by

the operator 104 into an instrument 106" (Emphasis added)." This statement alone suggests that the overall condition of all areas of the roof is determined. As the operator surveys the roof, in order to enter information regarding defects, the operator obviously evaluates all areas of the roof and determines that certain areas are free of defects, and are therefore not entered. Therefore, the overall condition of some areas of the roof are "defect free." These defect free areas are obviously used in assessing remanufacturing options, even though the remanufacturing option that may be automatically applied to the "defect free" areas is, "no remanufacturing needed."

9.6. The Applicant argues:

9.7. Further, the Office asserts that FIG. 17 is an illustrative output listing of a roof inventory. For problem type 5, the Office asserts that it would have been obvious that the number of problems is zero and that it would have been obvious that one of the plurality of remanufacturing options is "no remanufacturing needed". Therefore, the Office asserts Watson appears to suggest assessing a plurality of remanufacturing options for each of the items regardless of a condition of each of the items as claimed.

9.8. Applicants respectfully disagree. Even assuming the Office's position that when the number of problem areas with defects is zero there is a "no remanufacturing needed" option, this is only one remanufacturing option. Thus, in Watson there is no assessment of a plurality of remanufacturing options *as* claimed because there is only one available option when in this example there are no areas of the roof with defects. With the present invention, a plurality of remanufacturing options are assessed for each of the items even when an item has "no defects." By way of example, remanufacturing options which are assessed for two non-defective items could be to replace them one new more efficient item or to reuse the non-defective items. To even further emphasize this difference, Applicants have added new dependent claims 116-121 to recite at least two of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items.

9.8.1. The Examiner respectfully replies:

9.8.2. Applicant's argument has been fully considered, and is persuasive. However, after further search and consideration, a new rejection is made.

9.9. The Applicant argues:

9.10. Like Watson, the other cited references do not teach or suggest these claim limitations. Accordingly, in view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 21, 39, 59, 72, and 85. Since claims 2-20 depend from and contain the limitations of claim 1, claims 22-38 depend from and contain the limitations of claim 21, claims 40-58 depend from and contain the limitations of claim 39, claims 60-71 depend from and contain the limitations of claim 59, claims 73-84 depend from and contain the limitations of claim 72, and claims 86-97 depend from and contain the limitations of claim 85, they are distinguishable over the cited references and are patentable in the same manner as claims 1, 21, 39, 59, 72, and 85.

9.11. The Office has indicated claims 110-115 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. As set forth above, Applicants have amended claims 110-115 to overcome the rejections under 35 U.S.C. 112, 2nd paragraph and to correct a typographical error in the dependency of claim 110. In view of the remarks with respect to claims 1, 21, 39, 59, 72, and 85 set forth herein, no further amendment of claims 110-115 is believed to be necessary and these claims are believed to be in condition for allowance.

9.11.1. The Examiner respectfully replies:

9.11.2. Applicant's argument has been fully considered, and is persuasive. However, after further search and consideration, a new rejection is made.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 121 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11.1. Regarding claim 121, the claim recites, "The medium as set forth in claim 94 wherein." The meaning of the claim cannot be reliably determined. For the purpose of claim examination, the phrase is interpreted as, "The medium as set forth in claim 94 wherein at least two of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items."

Claim Rejections - 35 USC § 101

12. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13. **Claims 1 - 20** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims appear to contain abstract ideas such as determining a risk priority, and therefore, the claims must be directed to a practical application having a useful, tangible and concrete result. The claims appear to lack a concrete result to support a practical application. The claims recite, "determining a risk priority of each of the items based on the obtained data." The specification appears to teach that the risk priority is determined with a failure mode, effects, and criticality analysis (FMECA), using a subjective process (*specification, page 17, lines 10 – 16*). A subjective process is not concrete, and so the claims appear to lack a concrete result. Because of the subjective nature of the FMECA, the determined viable remanufacturing items could be adjusted at will simply by altering the subjective outcome of the FMECA.

14. **Claims 21 - 38** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims appear to contain abstract ideas such as determining a risk priority, and therefore, the claims must be directed to a practical application having a useful, tangible and concrete result. The claims appear to lack a concrete result to support a practical application. The claims recite, "a risk priority processing system in the at least one computing device that determines a risk priority of each of the items based on the obtained data." The specification appears

to teach that the risk priority is determined with a failure mode, effects, and criticality analysis (FMECA), using a subjective process (*specification, page 17, lines 10 – 16*). A subjective process is not concrete, and so the claims appear to lack a concrete result. Because of the subjective nature of the FMECA, the determined viable remanufacturing items could be adjusted at will simply by altering the subjective outcome of the FMECA.

15. **Claims 39 - 58** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims appear to contain abstract ideas such as determining a risk priority, and therefore, the claims must be directed to a practical application having a useful, tangible and concrete result. The claims appear to lack a concrete result to support a practical application. The claims recite, "determining a risk priority of each of the items based on the obtained data." The specification appears to teach that the risk priority is determined with a failure mode, effects, and criticality analysis (FMECA), using a subjective process (*specification, page 17, lines 10 – 16*). A subjective process is not concrete, and so the claims appear to lack a concrete result. Because of the subjective nature of the FMECA, the determined viable remanufacturing items could be adjusted at will simply by altering the subjective outcome of the FMECA.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson (U.S. Patent 6,581,045) in view of Onodera (Onodera, Katsushige; "Effective Techniques of FMEA at Each Life-Cycle Stage", 1997, Proceedings of the Annual Reliability and Maintainability Symposium).

17.1. **Regarding claims 1, 21 and 39,** Watson teaches:

17.1.1. A system and method for assessing remanufacturability of one or more items in an apparatus **(Title; and Abstract; and column 2, lines 27 – 58; and column 4, lines 35 – 40; and column 6, lines 5 – 17 and 49 - 60).**

17.1.2. A computer readable medium having stored thereon instructions which when executed by at least one processor perform steps **(figures 12 and 13)**.

17.1.3. software in at least one computing device **(figures 12 – 13, and columns 21 - 22)**.

17.1.4. Determining an overall condition of items in an apparatus regardless of the condition of each of the items based on obtained data **(column 3, lines 32 – 50; and column 5, lines 55 – 67; and column 6, lines 1 – 17 and 29 - 45)**.

17.1.5. Determining whether each of the items satisfies one or more operation specifications based on the obtained data **(column 3, lines 32 – 50; and column 4, lines 13 – 20; and column 8, lines 40 – 47; especially the performance estimate factor)**.

17.1.6. Assessing a plurality of remanufacturing options for ~~each of~~ the items based on the determined overall conditions of the items regardless of a condition of each of the items for each of the items to identify which of the plurality of remanufacturing options are viable **(column 4, lines 35 – 42; and column 5, lines 55 – 67; and column 6, lines 8 – 18; and column 9, lines 5 – 48, especially lines 44 – 48)**.

17.1.7. displaying one or more of the identified, viable remanufacturing options **(figure 16, asset mgmt processor connected to display element at lower left, and column 25, lines 57 – 63, and column 26, lines 27 – 31, and column 9, lines 48 - 57)**.

17.2. **Regarding claims 1, 21 and 39**, Watson does not specifically teach:

17.2.1. Determining a risk priority of each of the items based on the obtained data.

17.2.2. Assessing a plurality of remanufacturing options for ***each of*** the items based on the determined overall conditions, ***and the determined risk priority*** for each of the items to identify which of the plurality of remanufacturing options are viable.

17.3. **Regarding claims 1, 21 and 39**, Onodera teaches:

17.3.1. Determining a risk priority of each of the items based on the obtained data **(pages 54 – 55, sections 5, 5.1, and 5.2)**.

17.3.2. Assessing a plurality of remanufacturing options for each of the items based on the determined risk priority for each of the items to identify which of the plurality of remanufacturing options are viable **(pages 54 – 55, sections 5, 5.1, and 5.2; especially section 5.2, second paragraph regarding analyses of maintenance)**.

17.4. **Regarding claims 1, 21 and 39**:

17.4.1. Official Notice is taken that assessing a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable was well known in the

analogous art of analysis of failure, repair and replacement of Navy subsystems. It would have been obvious to the ordinary artisan at the time of invention to assess a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable. The motivation would have been the knowledge of the ordinary artisan that failure rates of a part increase with age and therefore, replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that new technology of current parts may perform a part's function faster or more efficiently, and therefore replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that replacement parts for a component may not be available, and therefore replacement may be the most cost effective option even if a component has no defects. As support for the Official Notice, the following references are provided:

17.4.1.1. Donald P. Gaver et al.; "Failure, repair and replacement analysis of a navy subsystem: a case study of a pump", 1998, Applied Stochastic Models and Data Analysis, Volume 13, pages 369 - 376; pages 369 - 370, section 1. Introduction and Problem Setting, teaches replacement of parts before failures.

17.4.1.2. Henry Livingston; "GEB1: diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Practices", 2000, 2000 DMSMS Conference, pages 1 - 11; teaches obsolescence of parts causes redesign of systems (page 2 of 11, section Weapon System Life Cycles).

17.4.1.3. John J. McCall; "Maintenance policies for stochastically failing equipment: a survey", March 1965, Management Science, Volume 11, Number 5, pages 493 - 524; page 494, third paragraph, and page 498, assessing a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable.

17.5. The motivation to use the art of Onodera with the art of Watson would have been the statement recited in Onodera that the RPN approach is used in analyses of maintenance efforts (**page 55, section 5.2**), and that Failure Mode and Effects Analysis is especially useful in maintainability analyses (**page 50, section Summary & Conclusions, first paragraph**), and further, that Failure Mode and Effects Analysis is useful in diagnosis of degradation of equipment (**page 54, section 4.5**).

17.6. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Onodera with the art of Watson to produce the claimed invention.

17.7. **Regarding claims 2, 22 and 40**, Watson teaches:

17.7.1. Collecting the obtained data on the items **(column 7, lines 15 – 20; and column 18, lines 31 – 44)**.

17.8. **Regarding claims 4 and 42,** Watson teaches:

17.8.1. Determining what types of the obtained data need to be collected **(column 19, line 21 – 35; it would have been obvious that data such as year constructed would have been determined as a type of data required to be collected)**.

17.9. **Regarding claims 7, 26 and 45,** Watson teaches:

17.9.1. Determining an overall condition of each of the items further comprises assessing of one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions of the item **(column 3, lines 32 – 50; ; and column 6, lines 39 - 60)**.

17.10. **Regarding claims 11, 29 and 49,** Watson does not specifically teach:

17.10.1. Determining one or more failure modes for each of the items.

17.10.2. Determining one or more causes for each of the failure modes.

17.10.3. Determining one or more effects of each of the failure modes.

17.10.4. Determining a severity rating for each of the effects.

17.10.5. Determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

17.11. **Regarding claims 11, 29 and 49,** Onodera teaches:

17.11.1. Determining one or more failure modes for each of the items **(page 52, section 4.1, second paragraph, items a and c; and page 52, table 1, columns 1 and 3)**.

17.11.2. Determining one or more causes for each of the failure modes **(page 52, section 4.1, second paragraph, items a and d; and page 52, table 1, columns 1 and 4)**.

17.11.3. Determining one or more effects of each of the failure modes **(page 52, section 4.1, second paragraph, items a and e; and page 52, table 1, columns 1 and 5)**.

17.11.4. Determining a severity rating for each of the effects **(page 55, table 8 and section 5.2)**.

17.11.5. Determining an occurrence rating for each of the effects **(page 55, table 9 and section 5.2)**, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes **(page 55, section 5.2)**.

17.12. **Regarding claims 13, 31 and 51,** Watson teaches:

17.12.1. That the remanufacturing options comprise a restore option and a replace option **(Abstract)**.

17.13. **Regarding claims 14, 32 and 52,** Watson teaches:

17.13.1. Identifying which of the plurality of remanufacturing options identified as viable is optimal (**column 6, lines 6 – 17**).

17.13.2. displaying the identified, optimal remanufacturing option (**figure 16, asset mgmt processor connected to display element at lower left, and column 25, lines 57 – 63, and column 26, lines 27 - 31**).

17.14. **Regarding claims 15, 33 and 53,** Watson teaches:

17.14.1. Obtaining cost data on each of the remanufacturing options for each of the items (**figure 1, item 158; and column 2, lines 19 – 41; and column 4, lines 55 – 59**).

17.15. **Regarding claims 16, 34 and 54,** Watson teaches:

17.15.1. Reassessing the plurality of remanufacturing options for each of the items based on the assessing of the plurality of the remanufacturing options and the obtained cost (**column 6, lines 7 – 17**).

17.16. **Regarding claims 17, 35 and 55,** Watson teaches:

17.16.1. Analyzing the value of each of the remanufacturing options based on two or more factors (**figure 17; and column 25, lines 19 – 42**).

17.17. **Regarding claims 18, 36 and 56,** Watson teaches:

17.17.1. At least one of the factors is a cost for each of the remanufacturing options (**figure 17; and column 25, lines 19 – 42**).

17.18. **Regarding claims 20, 38 and 58,** Watson teaches:

17.18.1. Analyzing an economic cost for at least one of the viable remanufacturing options (**column 6, lines 6 – 17; and column 9, lines 42 – 60**).

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18. **Claims 3, 23 and 41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera as applied to claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above, further in view of common knowledge in the art.

18.1. Watson as modified by Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above.

18.2. **Regarding claims 3 and 41,** Watson teaches:

18.2.1. Obtaining at least a portion of the data from stored information on the items **(figure 1, element 134; and column 8, lines 58 – 64; and column 24, lines 46 – 50).**

18.2.2. Examining the items to obtain at least a portion of the data **(column 7, lines 15 – 20).**

18.3. **Regarding claims 3 and 41,** Watson does not specifically teach:

18.3.1. Researching the items to obtain at least a portion of the data.

18.4. **Regarding claim 23,** Watson teaches:

18.4.1. Determining what types of the obtained data need to be collected **(column 19, line 21 – 35; it would have been obvious that data such as year constructed would have been determined as a type of data required to be collected).**

18.4.2. another portion of the obtained data is from evaluating each of the items **(column 7, lines 15 – 20).**

18.5. **Regarding claim 23,** Watson does not specifically teach:

18.5.1. at least a portion of the obtained data is obtained by researching the items.

18.6. **Regarding claims 3, 23 and 41,** Official Notice is taken that it was old and well known to the ordinary artisan at the time of invention to research data for an item. It would have been obvious to the ordinary artisan at the time of invention to have at least a portion of the obtained data to be obtained by researching the items. The motivation to combine would have been the knowledge of the ordinary artisan of the need to obtain data needed to evaluate alternatives and make a decision regarding remanufacturing options.

18.7. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use common knowledge in the art with the art of Watson as modified by Onodera to produce the claimed invention.

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19. **Claims 5 – 6, 12, 24 – 25, 30, 43 – 44, 50 and 116 - 118** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera as applied to claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above, further in view of MilStd1629A (MIL-STD-1629A, "Military Standard procedures for performing a failure mode, effects and criticality analysis", 24 November 1980).

19.1. Watson as modified by Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above.

19.2. **Regarding claims 5, 24 and 43**, Watson teaches:

19.2.1. Identifying one or more systems in the apparatus (**column 2, line 67; and column 3, lines 1 – 5; and column 2, lines 41 – 54**).

19.2.2. Identifying components in each of the systems (**column 2, line 67; and column 3, lines 1 – 5; and column 2, lines 41 – 54**).

19.2.3. Assessing a viability of a plurality of remanufacturing options for each of the items is based on the system and components (**column 2, line 67; and column 3, lines 1 – 5; and column 2, lines 41 – 54; and column 6, lines 29 – 35; and column 26, lines 32 – 44**).

19.3. **Regarding claims 5, 24 and 43**, Watson does not specifically teach:

19.3.1. Determining a functional hierarchy and interrelation of the systems and components, wherein assessing a viability of a plurality of remanufacturing options for each of the items is *also* based on *the functional hierarchy and interrelation of* the system and components.

19.4. **Regarding claims 5, 24 and 43**, MilStd1629A teaches:

19.4.1. Determining a functional hierarchy and interrelation of the systems and components (**page 101-9, figure 101-1 Example of a functional block diagram**)

19.5. The motivation to use the art of MilStd1629A with the art of Watson as modified by Onodera would have been obvious given the statement in MilStd1629A that its use is called for in maintainability and maintenance plan analysis (**page iii, Foreword, last paragraph**), and it use in maintenance requirements (**section 1. SCOPE, paragraph 1.1**). Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of MilStd1629A with the art of Watson as modified by Onodera to produce the claimed invention.

19.6. **Regarding claims 6, 25 and 44**, Watson does not specifically teach:

19.6.1. Identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems and components.

19.7. **Regarding claims 6, 25 and 44**, MilStd1629A teaches:

19.7.1. Identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems

and components **(page 103-4, figure 103.1 Example of FMECA- maintainability information worksheet format, upper left quadrant, elements SYSTEM/SUBSYSTEM DESCRIPTION and SYSTEM/SUBSYSTEM NOMENCLATURE; and page 101-9, figure 101-1 Example of a functional block diagram).**

19.8. **Regarding claims 12, 30, and 50,** Watson does not specifically teach:

19.8.1. The effects comprise a local effect, a secondary effect, and an ultimate effect.

19.9. **Regarding claims 12, 30, and 50,** MilStd1629A teaches:

19.10. The effects comprise a local effect, a secondary effect, and an ultimate effect **(page 4, sections 3.1.13, 3.1.13.1, 3.1.13.2, 3.1.13.3).**

19.11. **Regarding claims 116 - 118,** Watson appears to teach:

19.11.1. At least <u>one</u> of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items **(column 4, lines 35 - 42; and column 5, lines 55 - 67; and column 6, lines 8 - 18; and column 9, lines 5 - 48, especially lines 44 - 48, and figure 17, Type 5; Watson appears to teach that for roof areas with no defects that the selected option is no action).**

19.12. Watson does not specifically teach:

19.12.1. At least *<u>two</u>* of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items.

19.13. Official Notice is taken that it was old and well known that at least *<u>two</u>* of the plurality of remanufacturing options are potentially viable for an item regardless of the condition of the item (the two options being replacement and "do nothing"), in the analogous art of analysis of failure, repair and replacement of Navy subsystems. It would have been obvious to the ordinary artisan at the time of invention to assess a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable. The motivation would have been the knowledge of the ordinary artisan that failure rates of a part increase with age and therefore, replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that new technology of current parts may perform a part's function faster or more efficiently, and therefore replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that replacement parts for a component may not be available, and therefore replacement may

be the most cost effective option even if a component has no defects. As support for the Official Notice, the following references are provided:

19.13.1.1. Donald P. Gaver et al.; "Failure, repair and replacement analysis of a navy subsystem: a case study of a pump", 1998, Applied Stochastic Models and Data Analysis, Volume 13, pages 369 - 376; pages 369 - 370, section 1. Introduction and Problem Setting, teaches replacement of parts before failures.

19.13.1.2. Henry Livingston; "GEB1: diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Practices", 2000, 2000 DMSMS Conference, pages 1 - 11; teaches obsolescence of parts causes redesign of systems (page 2 of 11, section Weapon System Life Cycles).

19.13.1.3. John J. McCall; "Maintenance policies for stochastically failing equipment: a survey", March 1965, Management Science, Volume 11, Number 5, pages 493 - 524; page 494, third paragraph, and page 498, assessing a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable.

20. **Claims 8 - 9, 27 - 28 and 46 - 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera as applied to claims **1 - 2, 4, 7, 11, 13 - 18, 20 - 22, 26, 29, 31 - 36, 38 - 40, 42, 45, 49, 51 - 56 and 58** above, further in view of Busch (U.S. Patent 6,052,631).

20.1. Watson as modified by Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **1 - 2, 4, 7, 11, 13 - 18, 20 - 22, 26, 29, 31 - 36, 38 - 40, 42, 45, 49, 51 - 56 and 58** above.

20.2. **Regarding claims 8, 27 and 46**, Watson does not specifically teach:

20.2.1. Determining one or more component functions associated with each component.

20.2.2. Determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

20.3. **Regarding claims 8, 27 and 46**, Onodera teaches:

20.3.1. Determining one or more component functions associated with each component (**page 52, section 4.1, paragraph 2, items labeled a and b**).

20.4. **Regarding claims 8, 27 and 46**, Busch teaches:

20.4.1. Determining one or more manufacturing standards for each of the components (**figure 13, element 1302; and figure 15, element 1504; and column 6, lines 14 – 22**).

20.5. The motivation to use the art of Busch with the art of Watson as modified by Onodera would have been obvious given the benefit recited in Busch that the invention facilitates inspection of a vehicle to detect the presence of prior damage (**column 2, lines 14 – 19**), which would have been a benefit in analyzing the condition of the asset and evaluating repair/replacement options recited in Watson (**Title**). Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Busch with the art of Watson as modified by Onodera to produce the claimed invention.

20.6. **Regarding claims 9, 28 and 47**, Watson teaches:

20.6.1. Identifying one or more systems in the apparatus, each of the systems comprising one or more components (**column 2, line 67; and column 3, lines 1 – 5; and column 2, lines 41 – 54**).

20.6.2. Identifying one or more systems functions for each of the systems, wherein the operations specifications also comprise the component system functions (**column 2, lines 41 – 54**).

21. **Claims 10 and 48** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera and Busch as applied to claims **8 – 9, 27 – 28 and 46 - 47** above, further in view of common knowledge in the art.

21.1. Watson as modified by Onodera and Busch teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **8 – 9, 27 – 28 and 46 - 47** above.

21.2. **Regarding claims 10 and 48**, Watson teaches:

21.2.1. Obtaining at least a portion of the standards from stored information on each of the components (**figure 1, element 134; and column 8, lines 58 – 64; and column 24, lines 46 – 50**).

21.3. **Regarding claims 10 and 48**, Watson does not specifically teach:

21.3.1. Obtaining at least a portion of the ***manufacturing*** standards from stored information on each of the components.

21.3.2. Researching each of the components to obtain at least a portion of the manufacturing standards.

21.4. **Regarding claims 10 and 48**, Busch teaches:

21.4.1. Obtaining manufacturing standards (**figure 13, element 1302; and figure 15, element 1504; and column 6, lines 14 – 22**).

21.5. **Regarding claims 10 and 48,** Official Notice is taken that it was old and well known in the art at the time of invention to research data for an item. The motivation to combine would have been the knowledge of the ordinary artisan of the need to obtain data needed to evaluate alternatives and make a decision regarding remanufacturing options. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use common knowledge in the art with the art of Watson as modified by Onodera and Busch to produce the claimed invention.

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22. Claims 19, 37 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera as applied to claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above, further in view of Lobley (U.S. Patent 6,151,565).

22.1. Watson as modified by Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above.

22.2. The art of Watson as modified by Onodera and the art of Lobley are analogous art because they both contain the art of decision support **(Watson, in the Abstract; and Lobley, title of patent)**.

22.3. **Regarding claims 19, 37 and 57,** Watson teaches:

22.3.1. A plurality of measurement criteria **(column 5, lines 65 – 67 and column 6, lines 1 – 5; column 8, lines 1 – 4)**

22.3.2. A plurality of remanufacturing options **(Title; Abstract; and column 2, lines 41 – 58; and column 6, lines 6 - 17)**.

22.4. **Regarding claims 19, 37 and 57,** Watson does not specifically teach:

22.4.1. *Determining a weight for each of* a plurality of measurement criteria.

22.4.2. *Rating each of the* remanufacturing *options for each of* the plurality of measurement criteria.

22.4.3. *Determining a total score for each of the* remanufacturing options *based on the weight and the scoring, wherein an optimal one* of the remanufacturing options *has the highest score*.

22.5. **Regarding claims 19, 37 and 57,** Lobley teaches:

22.5.1. Determining a weight for each of a plurality of measurement criteria **(figure 6, columns labeled Factor and Weight; and column 3, lines 28 – 50; and column 7, lines 33 - 51)**.

22.5.2. Rating each of the remanufacturing options for each of the plurality of measurement criteria (**figure 6, section labeled Standards; and column 3, lines 28 – 50; and column 7, lines 33 - 51**).

22.5.3. Determining a total score for each of the remanufacturing options based on the weight and the scoring, wherein an optimal one of the remanufacturing options has the highest score (**column 7, lines 33 – 51; and column 1, lines 19 - 36**).

22.6. The motivation to use the art of Lobley with the art of Watson as modified by Onodera would have been the benefit recited in Lobley that a decision support system provides a method for determining the most preferred alternative of several possible alternatives (**paraphrased from column 1, lines 19 – 36**), and further that the Lobley method obviates or mitigates at least some disadvantages of the prior art (**column 2, lines 28 – 35**). Further, Lobley recites the benefit of an improved indication of an appropriate alternative to select (**column 2, lines 21 – 26**). The items recited would have been recognized by the ordinary artisan as benefits that would reduce costs. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Lobley with the art of Watson as modified by Onodera to produce the claimed invention.

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23. **Claims 107 - 109** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Onodera as applied to claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above, further in view of Partridge (U.S. Patent No. 6,397,992).

23.1. Watson as modified by Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **1 - 2, 4, 7, 11, 13 - 18, 20 – 22, 26, 29, 31 – 36, 38 - 40, 42, 45, 49, 51 – 56 and 58** above.

23.2. **Regarding claims 107 - 109**, Watson does not specifically teach:

23.2.1. assessing whether one of the remanufacturing options is an upgrade that replaces two or more items with a smaller set of items.

23.3. **Regarding claims 107 - 109**, Partridge appears to teach:

23.3.1. an upgrade that replaces two or more items with a smaller set of items (**column 1, lines 35 – 41**).

23.4. The motivation to use the art of Partridge with the art of Watson as modified by Onodera would have been the benefit recited in Partridge that the invention reduces the costs of manufacture **(column 1, lines 40 - 45)**.

23.5. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Partridge with the art of Watson as modified by Onodera to produce the claimed invention.

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24. **Claims 59 - 62, 70 - 75, 83 - 88 and 96 - 97** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson (U.S. Patent 6,581,045) in view of Moore (U.S. Patent 5,877,961).

24.1. **Regarding claims 59 and 85**, Watson teaches:

24.1.1. A method for assessing remanufacturability of one or more items in an apparatus **(Title; and Abstract; and column 2, lines 27 - 58; and column 4, lines 35 - 40; and column 6, lines 5 - 17 and 49 - 60)**.

24.1.2. A computer readable medium having stored thereon instructions which when executed by at least one processor perform steps **(figures 12 and 13; especially figure 12, element 280)**.

24.1.3. Obtaining one or more assessments of the one or more items regardless of a condition of each item **(column 3, lines 32 - 50; and column 5, lines 55 - 67; and column 6, lines 1 - 17 and 29 - 45)**.

24.1.4. Assessing a plurality of remanufacturing options for ~~**each of**~~ the items regardless of the condition of each of the items based on the one or more assessments to identify which of the plurality of remanufacturing options are viable **(column 4, lines 35 - 42; and column 5, lines 55 - 67; and column 6, lines 8 - 18; and column 9, lines 5 - 48, especially lines 44 - 48)**.

24.2. **Regarding claims 59 and 85**, Watson does not specifically teach:

24.2.1. Assessing a plurality of remanufacturing options for ***each of*** the items regardless of the condition of each of the items based on the one or more assessments to identify which of the plurality of remanufacturing options are viable.

24.2.2. displaying one or more of the identified, viable remanufacturing options.

24.3. **Regarding claims 59 and 85**, Moore teaches:

24.3.1. displaying one or more of the identified, viable remanufacturing options **(figure 10, remanufacturing options beneath the caption <ADD NEW ITEM>)**.

24.4. Regarding claims 59 and 85:

24.4.1. Official Notice is taken that assessing a plurality of remanufacturing options for each item regardless of the condition of each item to identify which of a plurality of remanufacturing options are viable was well known in the analogous art of analysis of failure, repair and replacement of Navy subsystems. It would have been obvious to the ordinary artisan at the time of invention to assess a plurality of remanufacturing options for each item regardless of the condition of each of the items to identify which of a plurality of remanufacturing options are viable. The motivation would have been the knowledge of the ordinary artisan that failure rates of a part increase with age and therefore, replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that new technology of current parts may perform a part's function faster or more efficiently, and therefore replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that replacement parts for a component may not be available, and therefore replacement may be the most cost effective option even if a component has no defects. As support for the Official Notice, the following references are provided:

24.4.1.1. Donald P. Gaver et al.; "Failure, repair and replacement analysis of a navy subsystem: a case study of a pump", 1998, Applied Stochastic Models and Data Analysis, Volume 13, pages 369 - 376; pages 369 - 370, section 1. Introduction and Problem Setting, teaches replacement of parts before failures.

24.4.1.2. Henry Livingston; "GEB1: diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Practices", 2000, 2000 DMSMS Conference, pages 1 - 11; teaches obsolescence of parts causes redesign of systems (page 2 of 11, section Weapon System Life Cycles).

24.4.1.3. John J. McCall; "Maintenance policies for stochastically failing equipment: a survey", March 1965, Management Science, Volume 11, Number 5, pages 493 - 524; page 494, third paragraph, and page 498, assessing a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable.

24.5. The motivation to use the art of Moore with the art of Watson would have been the benefit recited in Moore that the invention provides more economic, more efficient, and higher quality control over repairs (**column 1, lines 16 - 25**).

24.6. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Moore with the art of Watson to produce the claimed invention.

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24.7. **Regarding claim 72**, Watson teaches:

24.7.1. A system for assessing remanufacturability of one or more items in an apparatus **(Title; and Abstract; and column 2, lines 27 – 58; and column 4, lines 35 – 40; and column 6, lines 5 – 17 and 49 - 60)**.

24.7.2. An item assessment processing system in at least one computing device that obtains one or more assessments of the one or more items regardless of a condition of each item **(column 3, lines 32 – 50; and column 5, lines 55 – 67; and column 6, lines 1 – 17 and 29 - 45)**.

24.7.3. A remanufacturing assessment processing system in the at least one computing device that assesses a plurality of remanufacturing options for ~~each of~~ the items regardless of the condition of each of the items based on the obtained one or more assessments to identify which of the plurality of remanufacturing options are viable **(column 4, lines 35 – 42; and column 5, lines 55 – 67; and column 6, lines 8 – 18; and column 9, lines 5 – 48, especially lines 44 – 48)**.

24.8. **Regarding claim 72**, Watson does not specifically teach:

24.8.1. A remanufacturing assessment processing system in the at least one computing device that assesses a plurality of remanufacturing options for ***each of*** the items regardless of the condition of each of the items based on the obtained one or more assessments to identify which of the plurality of remanufacturing options are viable

24.8.2. displaying one or more of the identified, viable remanufacturing options.

24.9. **Regarding claim 72**, Moore teaches:

24.9.1. displaying one or more of the identified, viable remanufacturing options **(figure 10, remanufacturing options beneath the caption <ADD NEW ITEM>)**.

24.10. **Regarding claim 72:**

24.10.1. Official Notice is taken that assessing a plurality of remanufacturing options for each item regardless of the condition of each item to identify which of a plurality of remanufacturing options are viable was well known in the analogous art of analysis of failure, repair and replacement of Navy subsystems. It would have been obvious to the ordinary artisan at the time of invention to assess a plurality of remanufacturing options for each item regardless of the condition of each of the items to identify which of a plurality of remanufacturing options are viable. The motivation would have been the knowledge of the ordinary artisan that failure rates of a part increase with age and therefore, replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that new technology of current parts may perform a part's function faster or more

efficiently, and therefore replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that replacement parts for a component may not be available, and therefore replacement may be the most cost effective option even if a component has no defects.

24.11. The motivation to use the art of Moore with the art of Watson would have been the benefit recited in Moore that the invention provides more economic, more efficient, and higher quality control over repairs (**column 1, lines 16 – 25**).

24.12. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Moore with the art of Watson to produce the claimed invention.

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24.13. **Regarding claims 60, 73 and 86,** Watson teaches:

24.13.1. Determining the overall condition of each of the items based on obtained data (**column 3, lines 32 – 50; and column 5, lines 55 – 67; and column 6, lines 1 – 17 and 29 - 45**).

24.14. **Regarding claims 61, 74 and 87,** Watson teaches:

24.14.1. Determining an overall condition of each of the items further comprises obtaining assessments of one or more physical conditions for each of the items, wherein the overall condition of each of the items is based on the assessed physical conditions of the item (**column 3, lines 32 – 50; and column 6, lines 39 - 60**).

24.15. **Regarding claims 62, 75 and 88,** Watson teaches:

24.15.1. Determining whether each of the items satisfies one or more operation specifications based on the obtained data (**column 3, lines 32 – 50; and column 4, lines 13 – 20; and column 8, lines 40 – 47; especially the performance estimate factor**).

24.16. **Regarding claims 70, 83 and 96,** Watson teaches:

24.16.1. That the remanufacturing options comprise a restore option and a replace option (**Abstract**).

24.17. **Regarding claims 71, 84 and 97,** Watson teaches:

24.17.1. Identifying which of the plurality of remanufacturing options identified as viable is optimal (**column 6, lines 6 – 17**).

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25. **Claims 63 - 64, 76 - 77 and 89 - 90** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Moore as applied to claims **59 - 62, 70 - 75, 83 - 88 and 96 - 97 above**, further in view of Onodera (Onodera, Katsushige; "Effective Techniques of FMEA at Each Life-Cycle Stage", 1997, Proceedings of the Annual Reliability and Maintainability Symposium), further in view of Busch (U.S. Patent 6,052,631).

25.1. Watson as modified by Moore teaches the system for remanufacturing items in an apparatus as recited in claims **59 - 62, 72 - 75 and 85 - 88 above.**

25.2. **Regarding claims 63, 76 and 89**, Watson does not specifically teach:

25.2.1. Determining one or more component functions associated with each component.

25.2.2. Determining one or more manufacturing standards for each of the components, wherein the operations specifications comprise the component functions and the manufacturing standards.

25.3. **Regarding claims 63, 76 and 89**, Onodera teaches:

25.3.1. Determining one or more component functions associated with each component (**page 52, section 4.1, paragraph 2, items labeled a and b**).

25.4. **Regarding claims 63, 76 and 89**, Busch teaches:

25.4.1. Determining one or more manufacturing standards for each of the components (**figure 13, element 1302; and figure 15, element 1504; and column 6, lines 14 - 22**).

25.5. The motivation to use the art of Busch with the art of Watson would have been obvious given the benefit recited in Busch that the invention facilitates inspection of a vehicle to detect the presence of prior damage (**column 2, lines 14 - 19**), which would have been a benefit in analyzing the condition of the asset and evaluating repair/replacement options recited in Watson (**Title**).

25.6. The motivation to use the art of Onodera with the art of Watson would have been the statement recited in Onodera that the RPN approach is used in analyses of maintenance efforts (**page 55, section 5.2**), and that Failure Mode and Effects Analysis is especially useful in maintainability analyses (**page 50, section Summary & Conclusions, first paragraph**), and further, that Failure Mode and Effects Analysis is useful in diagnosis of degradation of equipment (**page 54, section 4.5**).

25.7. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Onodera and the art of Busch with the art of Watson as modified by Moore to produce the claimed invention.

25.8. **Regarding claims 64, 77 and 90**, Watson teaches:

25.8.1. Identifying one or more systems in the apparatus, each of the systems comprising one or more components (**column 2, line 67; and column 3, lines 1 - 5; and column 2, lines 41 - 54**).

25.8.2. Identifying one or more systems functions for each of the systems, wherein the operations specifications also comprise the component system functions (**column 2, lines 41 - 54**).

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26. **Claims 65 - 66, 78 - 79 and 91 - 92** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Moore as applied to claims **59 - 62, 70 - 75, 83 - 88 and 96 - 97 above**, further in view of Onodera (Onodera, Katsushige; "Effective Techniques of FMEA at Each Life-Cycle Stage", 1997, Proceedings of the Annual Reliability and Maintainability Symposium).

26.1. Watson as modified by Moore teaches the system for remanufacturing items in an apparatus as recited in claims **59 - 62, 70 - 75, 83 - 88 and 96 - 97** above.

26.2. **Regarding claim 65, 78 and 91**, Watson does not specifically teach:

26.2.1. Obtaining one or more assessments comprises determining a risk priority of each of the items based on the obtained data.

26.3. **Regarding claims 65, 78 and 91**, Onodera teaches:

26.4. Obtaining one or more assessments comprises determining a risk priority of each of the items based on the obtained data (**pages 54 - 55, sections 5, 5.1, and 5.2**).

26.5. The motivation to use the art of Onodera with the art of Watson as modified by Moore would have been the statement recited in Onodera that the RPN approach is used in analyses of maintenance efforts (**page 55, section 5.2**), and that Failure Mode and Effects Analysis is especially useful in maintainability analyses (**page 50, section Summary & Conclusions, first paragraph**), and further, that Failure Mode and Effects Analysis is useful in diagnosis of degradation of equipment (**page 54, section 4.5**).

26.6. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Onodera with the art of Watson as modified by Moore to produce the claimed invention.

26.7. **Regarding claims 66, 79 and 92,** Watson does not specifically teach:

26.7.1. Determining one or more failure modes for each of the items.

26.7.2. Determining one or more causes for each of the failure modes.

26.7.3. Determining one or more effects of each of the failure modes.

26.7.4. Determining a severity rating for each of the effects.

26.7.5. Determining an occurrence rating for each of the effects, wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes.

26.8. **Regarding claims 66, 79 and 92,** Onodera teaches:

26.8.1. Determining one or more failure modes for each of the items **(page 52, section 4.1, second paragraph, items a and c; and page 52, table 1, columns 1 and 3).**

26.8.2. Determining one or more causes for each of the failure modes **(page 52, section 4.1, second paragraph, items a and d; and page 52, table 1, columns 1 and 4).**

26.8.3. Determining one or more effects of each of the failure modes **(page 52, section 4.1, second paragraph, items a and e; and page 52, table 1, columns 1 and 5).**

26.8.4. Determining a severity rating for each of the effects **(page 55, table 8 and section 5.2).**

26.8.5. Determining an occurrence rating for each of the effects **(page 55, table 9 and section 5.2),** wherein the risk priority is derived from the severity rating and the occurrence rating for each of the causes **(page 55, section 5.2).**

27. **Claims 67, 80 and 93** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Moore and Onodera as applied to claims **65 - 66, 78 - 79 and 91 - 92** above, further in view of MilStd1629A (MIL-STD-1629A, "Military Standard procedures for performing a failure mode, effects and criticality analysis", 24 November 1980).

27.1. Watson as modified by Moore and Onodera teaches a method and system for assessing remanufacturability of one or more items in an apparatus, as recited in claims **65 - 66, 78 - 79 and 91 - 92** above.

27.2. **Regarding claims 67, 80 and 93,** Watson does not specifically teach:

27.2.1. The effects comprise a local effect, a secondary effect, and an ultimate effect.

27.3. **Regarding claims 67, 80 and 93,** MilStd1629A teaches:

27.4. The effects comprise a local effect, a secondary effect, and an ultimate effect **(page 4, sections 3.1.13, 3.1.13.1, 3.1.13.2, 3.1.13.3).**

27.5. The motivation to use the art of MilStd1629A with the art of Watson as modified by Moore and Onodera would have been obvious given the statement in MilStd1629A that its use is

called for in maintainability and maintenance plan analysis (**page iii, Foreword, last paragraph**), and its use in maintenance requirements (**section 1. SCOPE, paragraph 1.1**). Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of MilStd1629A with the art of Watson as modified by Moore and Onodera to produce the claimed invention.

28. **Claims 68 – 69, 81 – 82, 94 - 95 and 119 - 121** are rejected under 35 U.S.C. 103(a) as being unpatentable over Watson as modified by Moore as applied to claims **59 – 62, 70 – 75, 83 – 88 and 96 - 97** above, further in view of MilStd1629A.

28.1. Watson as modified by Moore teaches the system for remanufacturing items in an apparatus as recited in claims **59 – 62, 72 - 75 and 85 – 88 above.**

28.2. **Regarding claims 68, 81 and 94**, Watson teaches the limitations taught in claim 5 above.

28.3. **Regarding claims 68, 81 and 94**, Watson does not specifically teach the limitations described in claim 5 above.

28.4. **Regarding claims 68, 81 and 94**, MilStd1629A teaches the limitations taught in claim 5 above.

28.5. The motivation to use the art of MilStd1629A with the art of Watson would have been obvious given the statement in MilStd1629A that its use is called for in maintainability and maintenance plan analysis (**page iii, Foreword, last paragraph**), and it use in maintenance requirements (**section 1. SCOPE, paragraph 1.1**). Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of MilStd1629A with the art of Watson as modified by Moore to produce the claimed invention.

28.6. **Regarding claims 69, 82 and 95**, Watson does not specifically teach:

28.6.1. Identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components, wherein the assessing a viability of a plurality of remanufacturing options for each of the items is also based on the functional hierarchy and interrelation of the systems, subsystems and components.

28.7. **Regarding claims 69, 82 and 95**, MilStd1629A teaches

28.7.1. Identifying one or more subsystems, wherein the determining a functional hierarchy and interrelation determines the functional hierarchy and interrelation of the systems, subsystems and components (**page 103-4, figure 103.1 Example of FMECA- maintainability information**

worksheet format, upper left quadrant, elements SYSTEM/SUBSYSTEM DESCRIPTION and SYSTEM/SUBSYSTEM NOMENCLATURE; and page 101-9, figure 101-1 Example of a functional block diagram).

28.8. Regarding claims 119 – 121, Watson appears to teach:

28.8.1. At least <u>one</u> of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items **(column 4, lines 35 – 42; and column 5, lines 55 – 67; and column 6, lines 8 – 18; and column 9, lines 5 – 48, especially lines 44 – 48, and figure 17, Type 5; Watson appears to teach that for roof areas with no defects that the selected option is no action).**

28.9. Watson does not specifically teach:

28.9.1. At least ***<u>two</u>*** of the plurality of remanufacturing options are potentially viable for each of the items regardless of the condition of the items.

28.10. Official Notice is taken that it was old and well known that at least ***<u>two</u>*** of the plurality of remanufacturing options are potentially viable for an item regardless of the condition of the item (the two options being replacement and "do nothing"), in the analogous art of analysis of failure, repair and replacement of Navy subsystems. It would have been obvious to the ordinary artisan at the time of invention to assess a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable. The motivation would have been the knowledge of the ordinary artisan that failure rates of a part increase with age and therefore, replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that new technology of current parts may perform a part's function faster or more efficiently, and therefore replacement may be the most cost effective option even if a part has no defects. Further motivation would have been the knowledge of the ordinary artisan that replacement parts for a component may not be available, and therefore replacement may be the most cost effective option even if a component has no defects. As support for the Official Notice, the following references are provided:

28.10.1.1. Donald P. Gaver et al.; "Failure, repair and replacement analysis of a navy subsystem: a case study of a pump", 1998, Applied Stochastic Models and Data Analysis, Volume 13, pages 369 – 376; pages 369 – 370, section 1. Introduction and Problem Setting, teaches replacement of parts before failures.

28.10.1.2. Henry Livingston; "GEB1: diminishing Manufacturing Sources and Material Shortages (DMSMS) Management Practices", 2000, 2000 DMSMS Conference, pages 1 – 11;

teaches obsolescence of parts causes redesign of systems (page 2 of 11, section Weapon System Life Cycles).

28.10.1.3. John J. McCall; "Maintenance policies for stochastically failing equipment: a survey", March 1965, Management Science, Volume 11, Number 5, pages 493 - 524; page 494, third paragraph, and page 498, assessing a plurality of remanufacturing options for each item to identify which of a plurality of remanufacturing options are viable.

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29. **Examiner's Note:** Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Allowable Subject Matter

30. Claims 110 - 115 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday - Friday 10:00 AM - 6:30 PM.
32. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.
33. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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RG

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